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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/782,036
Filing Date: February 14, 2001
Appellant(s): HINDS ET AL.

Jeffrey A. Schmidt
For Appellants

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8-2-04.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellants' statement of the status of amendments after final rejection contained in the brief is correct. In the after final amendment filed 3-19-04 (which has been entered), claim 5 contains a typographical error. In claim 5, there should be a period after "material". See original claim 5 on page 13 of the original disclosure.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellants' statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellants' brief includes a statement that claims 1-5, 8, 10-23 and 25-32 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,396,566	BRINKMANN ET AL	8-1983
4,501,201	TAKEUCHI ET AL	4-1985
4,743,187	SCHERMUTZKI	5-1988
3,385,722	WEAVER ET AL	5-1968
2,960,727	BRADSHAW ET AL	11-1960
4,997,507	MEYER	3-1991
3,883,386	GARBINI ET AL	5-1975

The ADMITTED PRIOR ART, specification page 1 line 9 to page 2 line 2.

Brinkmann et al discloses making a sheet such as a floor covering by applying thermoplastic particles on a lower belt of a twin-belt press; preheating the thermoplastic particles on the lower belt; applying heat and pressure to the thermoplastic particles between the upper belt and the lower belt to weld (fuse) the particles together; and cooling the layer of welded (fused) particles. If a composite sheet is desired, Brinkmann et al teaches applying thermoplastic particles on a textile sheet such as a glass fiber mat and pressing the particles and sheet into a composite sheet in the twin belt press.

Takeuchi et al, directed to floor coverings, teaches using a composition comprising thermoplastic particles such that thermoplastic material is provided on one side of a textile sheet such as glass fiber non-woven fabric (figure 2) **or** on both sides of the textile sheet (figure 1).

Schermutzki teaches *sequentially* applying thermoplastic material, textile and thermoplastic material in order to provide thermoplastic material on both sides of a textile sheet such as a glass fiber mat. In figure 4, Schermutzki shows applying thermoplastic particles from a device 8 on an inclined section of a lower belt 2 *before / upstream* of a location at which a glass fiber mat 4 is applied over a horizontal section of the lower belt 2; and applying thermoplastic particles on an upper side of the glass fiber

mat using a device 11d located *downstream* of the location at which the glass fiber mat is applied over the horizontal section of the lower belt.

Bradshaw et al teaches a dual belt press for applying heat and pressure to thermoplastic particles in which a pair of nipping rolls 38, 44 are located between a heating zone (32,34) and a cooling zone (48, 50).

Weaver et al teaches consolidating thermoplastic particles to make a smooth sheet for covering floors and then, if a glossier surface is required, passing the sheet between nipping rolls 19, 20.

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 10-23 and 25-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brinkmann et al in view of Takeuchi et al and Schermutzki and in view of Weaver et al and/or Bradshaw et al.

Brinkmann et al discloses a method for making sheeting using a twin belt press, which in the past has been employed for example for smoothing out of thin synthetic resin films. See col. 4 lines 8-14. The sheeting may be used as a floor covering. See col. 2 line 64. The method for making a sheet comprises:

applying thermoplastic resin in the form of particles such as shreds, crumbs, cuttings, pieces, chips or the like on the lower belt 11 of a "low pressure" twin belt press (dual belt press) to form a raw material layer;

preheating the thermoplastic particles of the raw material layer on the lower belt 11 using infrared radiators 19, 20;

heating and pressing the preheated raw material layer of thermoplastic particles between the upper belt and the lower belt of the twin belt press to form a thermoplastic sheet of welded (fused) particles; and

cooling and pressing the sheet.

See figure 1. Brinkmann et al also teaches making a composite sheet by applying the thermoplastic particles on a textile sheet and pressing the thermoplastic into a composite sheet in the treatment zone. See column 3 lines 60-68 and col. 7 lines 52-58. Brinkmann et al does not specifically recite applying the thermoplastic particles twice so that thermoplastic particles are applied to each side of the textile sheet.

Takeuchi et al, directed to floor coverings, teaches using a composition comprising thermoplastic particles such that thermoplastic material is provided on one side of a textile sheet such as glass fiber non-woven fabric (figure 2) **or** on both sides of the textile sheet (figure 1).

Schermutzki teaches *sequentially* applying thermoplastic material, textile and thermoplastic material in order to provide thermoplastic material on both sides of a textile sheet such as a glass fiber mat. See figures 1-5. In figure 4, Schermutzki shows applying thermoplastic particles from a device 8 on an inclined section of a lower belt 2 *before / upstream* of a location at which a glass fiber mat 4 is applied over a horizontal section of the lower belt 2; and applying thermoplastic particles on an upper side of the

glass fiber mat using a device 11d located *downstream* of the location at which the glass fiber mat is applied over the horizontal section of the lower belt.[1]

As to claim 1, it would have been obvious to one of ordinary skill in the art to apply thermoplastic particles on the lower belt 11 to form a first layer, apply a textile sheet on the first layer and then apply thermoplastic particles on the textile layer to form a second layer *so that* after heating and pressing between the belts, the **composite sheet floor covering** of Brinkmann et al comprises a textile sheet having thermoplastic material on both sides since (1) Takeuchi et al, also directed to making a floor covering using thermoplastic particles (PVC powder), teaches that a **floor covering** having thermoplastic material on both sides (figure 1) is an *alternative* to having thermoplastic on only one side (figure 2) and (2) Schermutzki, also directed to using thermoplastic particles to form a **composite sheet**, suggests applying a first layer of thermoplastic particles on a lower belt *before / upstream* of steps of applying a textile sheet (glass matt), applying a second layer of thermoplastic particles on the glass mat, and applying heat and pressure between a pair of belts in order to incorporate the textile sheet in the thermoplastic resin. The first substrate in claim 1 reads on the lower belt of Brinkmann et al. See for example dependent claim 10.

Hence: Brinkman et al, directed to making a floor covering, teaches applying a second substrate (textile sheet) on the first substrate (the belt) and scattering thermoplastic material on one side of the textile sheet and then pressing between the

[1] In Schermutzki, it is acknowledged that the resin from device 11d is not smoothened. However, Brinkmann et al's thermoplastic particles are smoothened because they are directly contacted by the dual belt press.

upper and lower belt. Takeuchi et al, also directed to making a floor covering, provides ample suggestion to provide thermoplastic material on both sides of Brinkman et al's textile sheet since Takeuchi et al teaches that a composite sheet having thermoplastic material on both sides of a textile sheet is an alternative to a composite sheet having thermoplastic material on one side of the textile sheet (see figures 1, 2, col. 5 lines 58-68, col. 6 lines 11-15). Schermutzki motivates one of ordinary skill in the art to scatter thermoplastic material on Brinkman et al's lower belt before applying the textile sheet and applying thermoplastic particles on the textile sheet in order to obtain a textile sheet having thermoplastic material on both sides thereof. As to when to apply thermoplastic particles on a "second substrate", Schermutzki teaches that thermoplastic particles may be applied at a downstream location. See device 11d. In other words: Motivated by the desire to provide thermoplastic material on both sides of a textile sheet, Schermutzki instructs one of ordinary skill in the art to use two steps of applying thermoplastic particles. While Schermutzki shows applying thermoplastic particles to a substrate upstream of the location at which the substrate travels over a lower coating (see for example device 11 in figure 4), Schermutzki also shows that thermoplastic particles may be applied downstream of such a location (see for example 11d). No unexpected results over the applied prior art for having thermoplastic material on both sides of the second substrate has been shown. No unexpected results over the applied prior art for the claimed sequence of steps has been shown.

The limitation of smoothing using a pair of **rollers** and cooling the layer would have been obvious depending on the desired smoothness in view of Bradshaw and/or

Weaver - Bradshaw et al, which like Brinkmann applies heat to a layer of thermoplastic particles to fuse them together, suggesting using a pair of rolls 38, 44 in a pressing means comprising two belts such that the **rolls 38, 44** are between heating means 32, 34 and cooling means 48, 50 as shown in figure 1 and Weaver, also directed to using thermoplastic particles to make a floor covering, suggests that, if desired, the layer formed by applying heat and pressure to a thermoplastic particle coated web, may be passed between **rolls 19, 20** "if a glossier surface is required" for the floor covering.

As to claim 2, note Brinkmann et al's suggestion at column 3 lines 60-68 to use a textile sheet in the form for example of a mat of mineral fibers.

As to claims 3-5 and 25, it would have been obvious to one of ordinary skill in the art to use a glass fiber mat such that the mat is less than 100g glass fiber / m^2 (claim 3) less than 65g glass fiber / m^2 (claim 4) or 30-50g glass fiber / m^2 (claim 5) in view of Takeuchi et al's suggestion to form a sheet product for a floor covering wherein the sheet product may include a core layer of glass fiber having a density of 30-200 g/m^2 (column 7 lines 1-6).

As to claim 10, note the lower belt of Brinkmann et al.

As to claims 11 and 12, it would have been obvious to one of ordinary skill in the art to use the same material or different materials for the two layers since Takeuchi et al suggests applying the same or different material to the two sides of the textile core 1.

As to claims 13-16, the limitations therein (thermoplastic particles forming basecoat / saturation layer) would have been obvious in view of the above noted

suggestion from the applied prior art to use a first and second layer of thermoplastic particles in Brinkmann et al's process of making a floor covering.

In claims 17 and 19, the first substrate is not a belt. With respect to those dependent claims directed to the use of a first substrate and second substrate in addition to the pair of belts, it would have been obvious to use two textile sheets in the process of Brinkmann et al by applying a second textile sheet on the thermoplastic layer of particles and applying another layer of thermoplastic particles depending on the desired reinforcement since (a) Brinkmann et al suggests applying the thermoplastic particles after the textile sheet is arranged on the lower belt, (b) Schermutzki suggests sequentially building layers (figure 5) and optionally (c) it is taken as well known / conventional per se in the floor covering art to sequentially build up alternating layers of textile and resin albeit in plastisol form (Brinkmann et al teaching to use thermoplastic particles instead of plastisol to make a floor covering).

As to claim 18, note the lower belt of Brinkmann et al.

As to claim 20, it would have been obvious to apply a third layer of thermoplastic particles in view of Takeuchi et al's teaching to make a sheet having more than three layers.

As to claims 21 and 26-28 (smoothing roller), it would have been obvious to use a smoothing roller in addition to the nip rollers for applying pressure in the belt press in view of (a) Brinkmann et al's teaching to apply heat and pressure in a belt press, (b) Bradshaw et al's teaching to apply heat and pressure in a belt press wherein nip rolls are used to apply pressure in the press and (c) Weaver's suggestion that a pair of

rollers (heated roll 19, back roll 20 at low temperature) for forming a floor covering having a glossier surface may be used after applying heat and pressure.

As to claim 22, note Brinkmann et al's suggestion to cool using cooling zone 24, 24a.

As to claim 23, note Brinkmann et al's' suggestion at column 3 lines 60-68 to use a textile sheet in the form for example of a mat of mineral fibers.

As to claims 29-31, it would have been obvious to use infeed rolls and outfeed rolls for rolls 19, 20 since (a) Weaver shows using an outfeed roll 21 at the rolls 19, 20 whereat the thermoplastic containing layer is directed around the heated roll 19 for smoothing and (b) it is taken as well known / conventional in the molding art to use both infeed and outfeed rolls for directing a layer comprising thermoplastic through a pair of rollers of which at least one is heated.

As to claim 32, the limitation regarding "contacting" the second substrate with the first coating would have been obvious in view of (a) Takeuchi et al's teaching to contact both sides of a textile sheet with thermoplastic material and (b) Schermutzki's teaching that the thermoplastic powder applying devices may be arranged such that thermoplastic material is scattered on a textile sheet using a device 11d after the textile sheet contacts a layer of thermoplastic on lower belt 2. No unexpected results over the above applied prior art for the claimed sequence of steps has been shown.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brinkmann et al in view of Takeuchi et al and Schermutzki and in view of Weaver

et al and/or Bradshaw et al as applied above and further in view of Meyer et al and Garbini et al.

As to claim 8, it would have been obvious to one of ordinary skill in the art to provide the pair of rollers such that they are adjustable nip rollers since use of adjustable rollers for exerting pressure on endless belts is well known / conventional in the endless belt press art as shown by Meyer et al and Garbini..

Claims 13-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brinkmann et al in view of Takeuchi et al and Schermutzki and in view of Weaver et al and/or Bradshaw et al as applied above and further in view of the admitted prior art.

The description of basecoat, saturation layer is considered to be suggested by the above applied prior art. In any event: As to claims 13-17 and 19, the limitations therein (thermoplastic particles forming basecoat / saturation layer) would have been obvious in view of (a) the above noted suggestion from the applied prior art to use a first and second layer of thermoplastic particles in Brinkmann et al's process of making a floor covering and (b) the admitted prior art's teaching that known floor coverings include a "base coat" and "saturation layer". As to claim 20, it would have been obvious to apply a third layer of thermoplastic particles in view of the admitted prior art's teaching to make a sheet having more than three layers including the "base coat" and the "saturation layer".

(11) Response to Argument

Issue 1 (claim 1)

Brinkmann et al, directed to floor coverings, discloses applying thermoplastic particles on a textile sheet and then leading such through a dual belt press. Takeuchi et al, also directed to floor coverings, suggests modifying Brinkmann et al's process such that thermoplastic material is provided on both sides of the textile sheet instead of only one side. As to how to provide thermoplastic material on both sides of a textile sheet, Schermutzki suggests a first step of applying thermoplastic material, applying a textile sheet on the thermoplastic material and a second step of applying thermoplastic material on the textile sheet.

With respect to the above combination, appellants argue that claim 1 is non-obvious over the above applied prior art since Schermutzki fails to teach the claimed sequence of steps. In particular, appellants argue that Schermutzki fails to teach a step of scattering powder, granules or pellets of a thermoplastic material onto the second substrate, after the second substrate has been applied over the first coating. The examiner disagrees. In figure 4, Schermutzki teaches a step of scattering thermoplastic powder from device 11d onto a second substrate (fiber mat 4), after the second substrate (fiber mat 4) has been applied over the first coating (the coating formed by scattering thermoplastic powder from device 8 and onto the lower belt (first substrate) 2). No unexpected results over the applied prior art for the claimed sequence of steps has been shown.

Appellants argue that "... Schermutzki fails to teach the sequential application of thermoplastic, textile onto the thermoplastic, and then application of a second thermoplastic onto the textile". See page 6 of Brief filed 8-2-04. Applicant is incorrect. First: Schermutzki teaches this sequential application of thermoplastic, textile and thermoplastic in figure 1; it being emphasized that the thermoplastic from device 6 is applied to the textile *downstream* (instead of upstream) of roller 9 and device 8.[2] Second: Schermutzki teaches this sequential application of thermoplastic, textile and thermoplastic in figure 4; it being emphasized that the thermoplastic from device 11d is applied to the textile *downstream* (instead of upstream) of the location at which mat 4 travels over the location corresponding to roller 9.

With respect to figure 4 of Schermutzki, appellants argue that thermoplastic powder from device 11d is not scattered onto a "second substrate" since it is scattered on a "resin and glass fiber layer". This argument is not persuasive since none of the present claims exclude the second substrate having "resin and glass fiber layer". In other words, all of the present claims read on applying thermoplastic material on the second substrate *before and after* applying the second substrate to the first coating; appellants having presented no convincing argument and/or evidence to the contrary.

Appellants argue mat 4 fails to contact resin layer 40 before thermoplastic powder from device 11d is applied to the mat 4. With respect to claim 1, this argument is not persuasive since (1) figure 4 shows the mat is "over" the thermoplastic on lower

[2] In figure 1 of Schermutzki, it is acknowledged that thermoplastic particles are "scattered onto" the belt 1 instead of mat 4. However, Brinkmann et al suggests "scattering" thermoplastic particles "onto" the textile instead of the upper belt. See col. 3 lines 60-68, col. 7 lines 52-58 of Brinkmann et al.

belt 2 at the location corresponding to roller 9 and (2) claim 1 recites "has been applied over the first coating" instead of --has contacted the first coating--.

Appellants comment that it is just as likely that one of ordinary skill would have been taught to place a second thermoplastic material onto the textile, and then apply that combination to the top of a first thermoplastic material. In response, the examiner makes the following statements: Motivated by the desire to provide thermoplastic material on both sides of a textile sheet, Schermutzki instructs one of ordinary skill in the art to use two steps of applying thermoplastic particles. While Schermutzki shows applying thermoplastic particles to a substrate upstream of the location at which the substrate travels over a lower coating (see for example device 11 in figure 4), Schermutzki also shows that thermoplastic material may be applied downstream of such a location (see for example 11d).

With reference to page 4 lines 1-11 of the specification, applicants allege: "...because the second substrate is applied onto the first coating before the powder, granules, or pellets of thermoplastic are scattered thereon, two layers easily and accurately may be formed in one pass through the heating station" (page 5 of Brief filed 8-2-04). In response, the examiner makes the following statements: (1) no unexpected results over the applied prior art has been shown and (2) page 4 lines 1-11 fails to describe any advantage for the claimed *sequence* of steps.

Appellants argue that Weaver and Bradshaw do not teach a step of scattering granules or pellets of a thermoplastic material onto the second substrate after the

second substrate has been applied over the first coating. More properly, Weaver and/or Bradshaw suggest using the claimed rollers in Brinkmann et al's process.

Issue 1 (claim 32)

Appellants comment that "...the end product of claim 32 may appear similar to that in Takeuchi" (page 8 of Brief filed 8-2-04). Examiner agrees that Takeuchi et al, directed to flooring covering, suggests modifying Brinkman et al's floor covering manufacturing process such that thermoplastic material is provided on both sides of the textile sheet instead of on only one side. Viewing the prior art as a whole, one of ordinary skill in the art is instructed to (1) apply the thermoplastic particles onto Brinkman et al's lower belt prior to applying the textile sheet thereon in order to provide the thermoplastic lower layer (see Schermutzki) and (2) apply thermoplastic particles onto the textile sheet in order to form the upper layer of thermoplastic (see col. 3 lines 60-68, col. 7 lines 53-58 of Brinkmann et al). With respect to contacting, Takeuchi and Schermutzki teach contacting thermoplastic and a lower surface of a textile.

With respect to "contacting", appellants argue that mat 4 does not contact resin 40 on belt 2 until mat 4 and belt 3 enter the compression zone 3, i.e. after mat 4 has been scattered with resin from device 11d. The examiner disagrees since figure 4 shows (1) moving the mat 4 along a horizontal path and (2) changing the orientation of the belt (upon which the resin layer 40 is applied) from inclined to horizontal prior to the location at which the thermoplastic powder from device 11d is applied onto the mat 4. It is emphasized that Schermutzki fails to teach maintaining a gap between mat 4 and the thermoplastic material on the lower belt prior to device 11d. As to the last remaining

limitation (the sequence of steps), Schermutzki, which like Takeuchi teaches contacting thermoplastic and a lower surface of a textile, teaches sequential application of thermoplastic material, textile and thermoplastic for the reasons discussed above. No unexpected results for the claimed sequence of steps over the applied prior art has been shown.

Issue 2

Appellants argue that Meyer and Garbini fail to teach anything that cures the above noted deficiencies in the combination of Brinkmann, Takeuchi, Schermutzki, Weaver and/or Bradshaw. This argument is not persuasive since Brinkmann, Takeuchi and Schermutzki fairly suggest, for the reasons discussed above, applying thermoplastic particles on a lower belt at an upstream location to form a first coating, applying a textile sheet over the first coating and, at a downstream location, applying thermoplastic particles on the textile sheet.

Issue 3

Appellants argue that the admitted prior art fails to teach anything that cures the above noted deficiencies in the combination of Brinkmann, Takeuchi, Schermutzki, Weaver and/or Bradshaw. This argument is not persuasive since Brinkmann, Takeuchi and Schermutzki fairly suggest, for the reasons discussed above, applying thermoplastic particles on a lower belt at an upstream location to form a first coating, applying a textile sheet over the first coating and, at a downstream location, applying thermoplastic particles on the textile sheet.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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